International Seminar at Nazarbayev University, June 15-16, 2017
"Towards Smart Sustainable Cities – Integrated Approaches" (TSSC)

The Global Political Ecology of the Lithium Commodity Chain

Глобальная политическая экология литиевой товарной цепочки

Presentation of the Swiss National Science Foundation project led by Prof. Marc Hufty at the Graduate Institute of Geneva (IHEID and SNF / FNS, June 2017 - May 2019)

Prof. Philippe Forêt

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TSSC Seminar Speaker

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Moving from shift to shift

The shift in Earth's biosphere may be delayed or avoided if we are able to manage properly a different type of worldwide shift. This shift from "brown" back to "green" is happening two hundred years after the Industrial Revolution moved us from "green" to "brown."

We need to conceptualize, describe, and regulate the new energy paradigm that is guiding our transition from an unsustainable fossil-fuel dependency to (hopefully) a sustainable and equitable low-carbon economy that may lower the projected increases in world temperature.

Powering the "Great Transformation"

Produced more and more often through the combination of several renewable sources (water, wind, sun, geothermal, and biomass), electricity is used in all aspects of the daily life in smart cities, from personal mobility to data management.

This is the energy that powers our society of knowledge, and which we take for granted.

The latest hot commodity

The shift towards a green economy implies a new type of dependency, which we must acknowledge: the production and recycling of key materials like Lithium that are used in batteries to supply electric power.

Lithium (Li) has become one of the planet's most strategic commodities.

This is partly because Li-based technologies have been at the cutting-edge of research and development in energy storage and delivery.

Engineers are indeed able to store large amounts of energy in a lightweight compact form.

A glorious but unsustainable trajectory

The global demand for Li would multiply by ten in 2050. This is the result of technical innovations (our i-Phones, for instance), which are based on the premise of limitless, reliable, and inexpensive supplies of Li.

However, we know that our supplies in Li are limited.

There is no guarantee that the very small number of Li-exporting countries can continue meeting the needs of the world's emerging green economy.

The unregulated price of Li is therefore increasing rapidly, even if we will see sudden drops. This volatility is in itself a problem.

http://business.financialpost.com/news/mining/lithium-is-the-latest-hot-metal-commodity-but-investor-fever-could-be-cooling

Potential issues

From production and processing to recycling, other issues could challenge the reliability of the Li commodity chain:

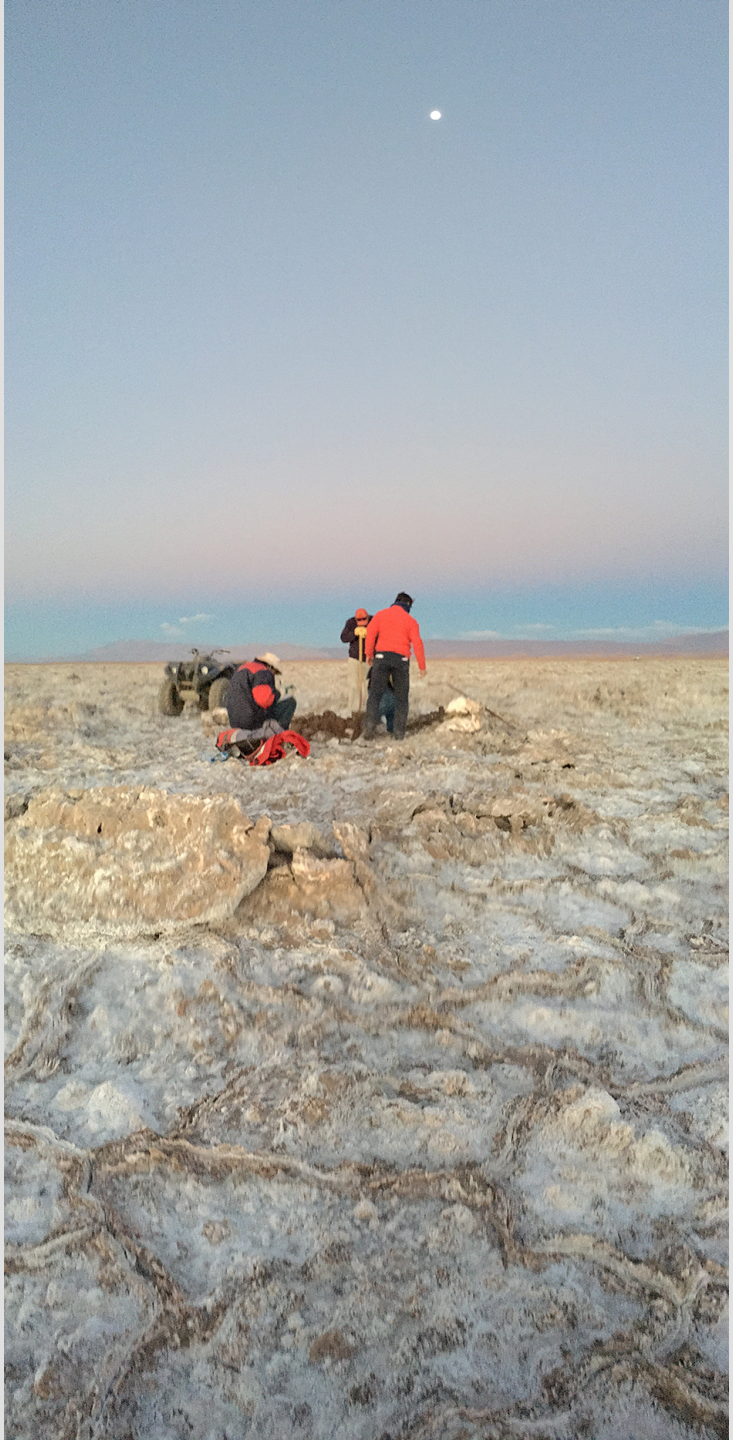
- At the community, provincial, or state level: unresolved environmental, technical, legal, social, and political issues may lead to conflicts.

- At the global level: without a framework with standards that we can enforce and monitor, we may expect environmental damage, market speculation, short-term solutions, unsustainable behaviors, corporate unaccountability.

The hard lessons from the oil age

The lack of a global recycling policy, and the exhaustion of Li deposits may lead to international conflicts.

As we move toward a green economy, our increased reliance on Li may reinforce (rather than weaken) the mechanisms of waste, pollution, addiction, corruption, and repression that have characterized the history of the 20th century, when the world economy and international politics were dependent on coal, oil, and gas.



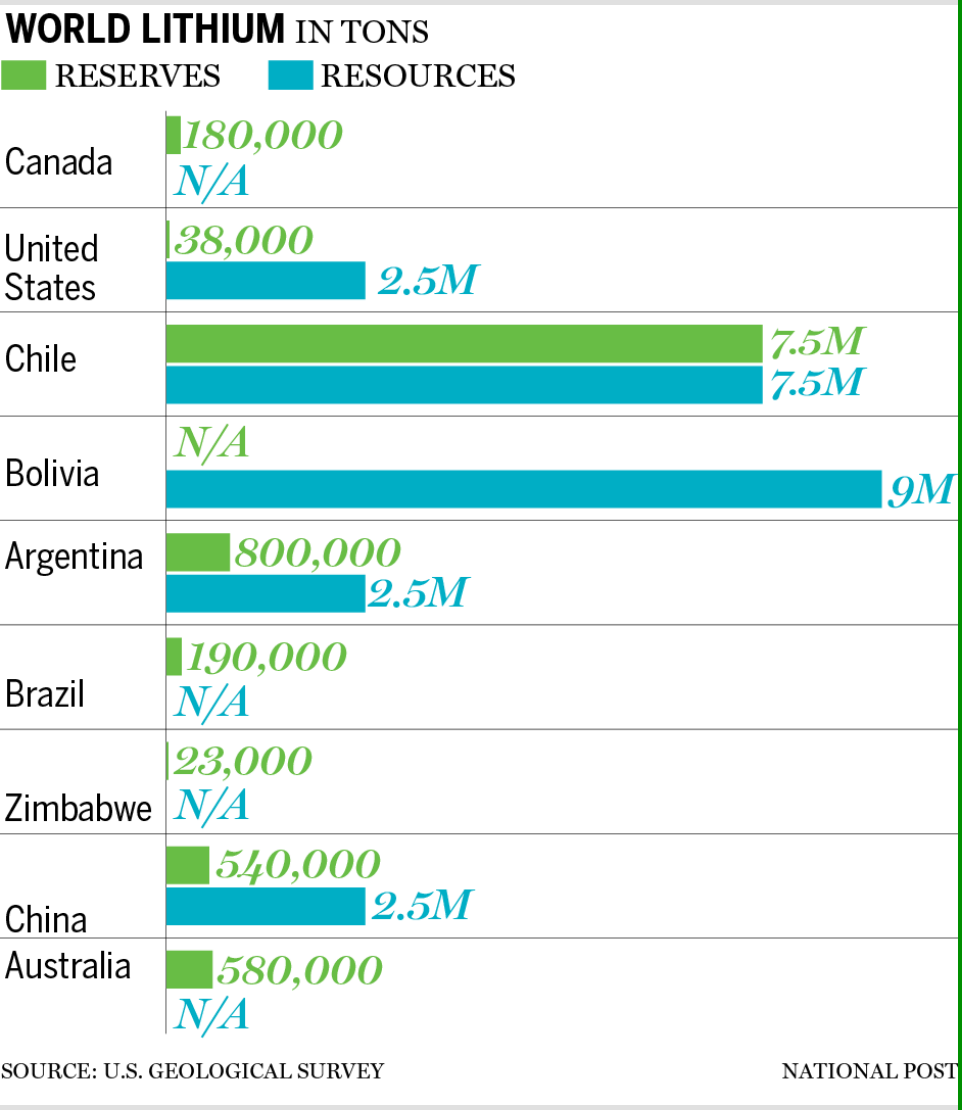
A unique metal

As a commodity, Lithium is in many ways unique because it is relatively rare in nature.

Li deposits are found in indigenous areas that are environmentally sensitive because of their isolation, elevation, and extreme aridity.

70% of the world's exploitable reserves are located in the *salares* (like the salt flats of Uyuni) of only three countries: Argentina, Bolivia, and Chile, which are called the 'ABC' li-rich countries.

The other countries with Li reserves are Australia and China. We do not know the results of the survey that China (?) did in 2009 (?) in Kazakhstan.



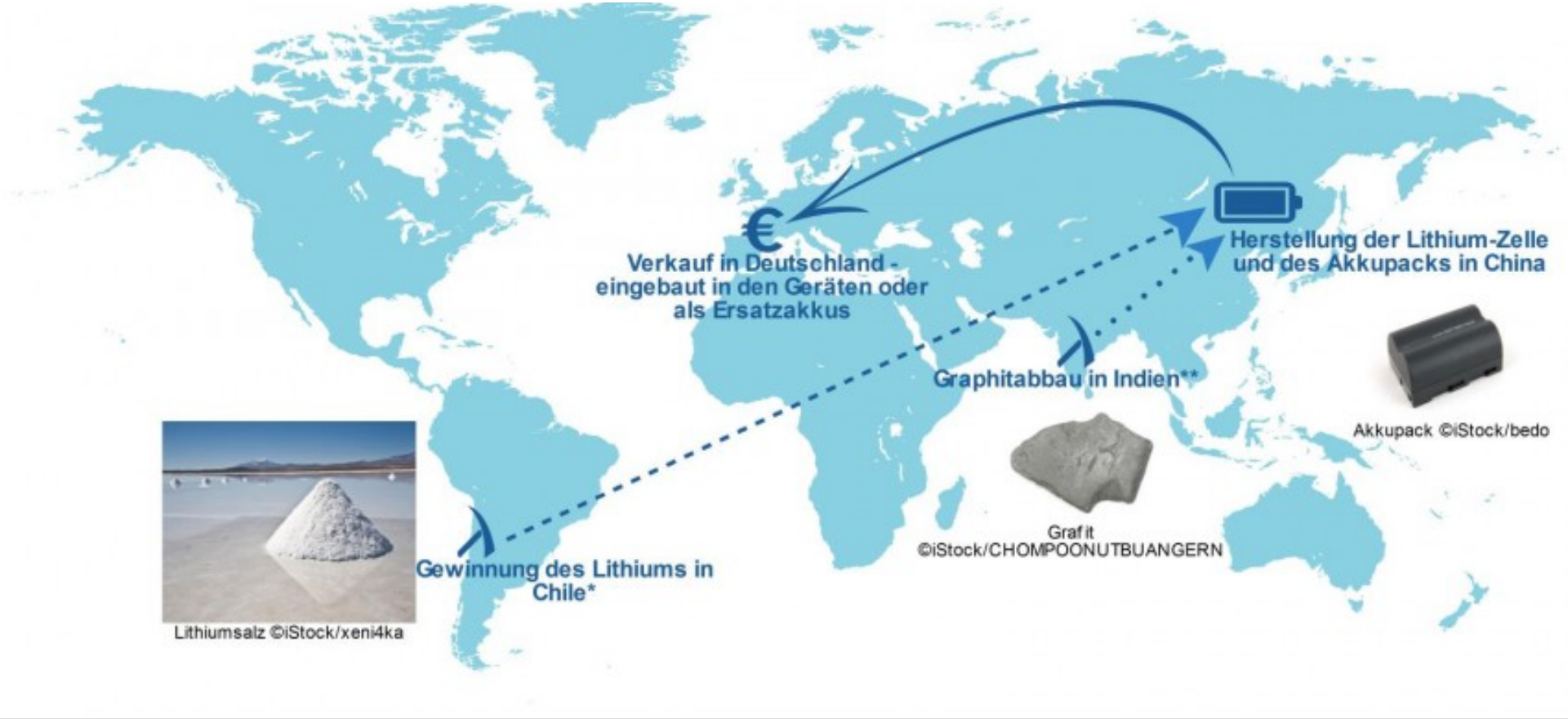
The geography of Lithium

The geography of the Li market is peculiar, with:

- A very small number of international firms producing the metal;
- A very small number of East Asian countries processing the metal to export worldwide electronics goods such as portable computers;
- A number of specific challenges to Li recycling within the circular economy of the importing countries (Kazakhstan or Switzerland)

What is less peculiar is the quasi-exclusion of the civil society from the debate on Li.

The global production network of Lithium,
from extraction in Chile to battery bought in Germany



A new project supported by
the Swiss National Science Foundation

Our project will be the first to examine the global political ecology of lithium, a topic that is new to environmental studies.

We will do research on the Li commodity chain, on the social and environmental costs of extraction and consumption, on water issues and electronic waste, on regional comparisons (ABC countries, emergent countries, developed counties, or failed states), and on worldwide logistics.

The objective of our project

We seek to re-orient the current debates in political ecology, development studies, governance studies, and the environmental humanities on a proper transition toward a low-carbon economy.

State of the field

While research by engineers on Li has been conducted with success, the humanities, social sciences, legal studies, and environmental studies have proposed until now incomplete, marginal, fragmented, and distorted perspectives.

We simply do not know where to locate Li studies within the HSS, how to work across disciplines in Li studies, and how to interact with material science and engineering.

For instance, the economists who study the Li market do not integrate external and qualitative factors.

Project methodology

We will propose a theoretical framework for the global governance of natural resources under the new green economy regime.

Our case study will bring together and then test the validity of empirical and theoretical contributions.

We will assess step by step the impact of the Li chain on local society and the global economy: from Chile to China, from China to Kazakhstan and Switzerland, and from Switzerland to Nigeria for final disposal

Expected results

We will produce a comprehensive, multi-level, and interdisciplinary analysis of the Li commodity chain.

The impact of this interdisciplinary project on the fundamentals of the green economy promises to be significant for future developments in the smart cities of the Anthropocene.

What does this mean?

We will lead a new research cluster on green commodities in Switzerland, strengthen our network of partners, train post-doctoral researchers, supervise PhD and MA students, publish scientific papers and reports, and interact with policy-makers and the officials of development agencies.

In practical terms, our project builds on prior fieldwork in desert environment and on existing scientific collaborations along the Li chain: Antofagasta, Astana, Beijing, Geneva, La Paz, Munich, Salta, Santiago de Chile, and Zurich.

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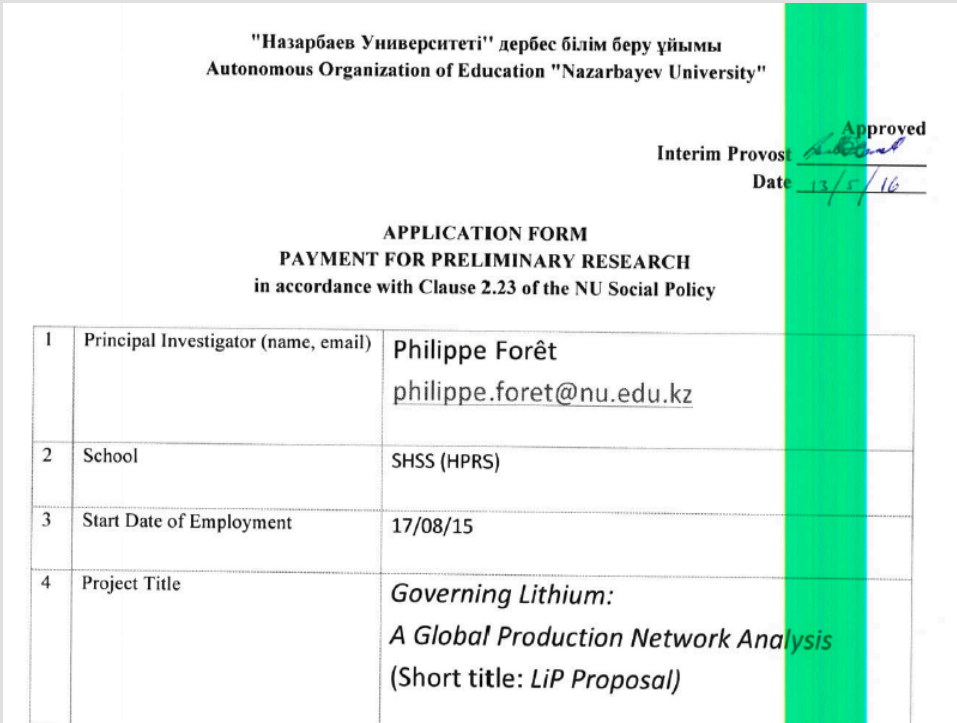

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Autonomous Organization of Education "Nazarbayev University"

Approved
Interim Provost
Date 13/5/16

APPLICATION FORM
PAYMENT FOR PRELIMINARY RESEARCH
in accordance with Clause 2.23 of the NU Social Policy

1	Principal Investigator (name, email)	Philippe Forêt philippe.foret@nu.edu.kz
2	School	SHSS (HPRS)
3	Start Date of Employment	17/08/15
4	Project Title	*Governing Lithium:* *A Global Production Network Analysis* (Short title: *LiP Proposal)*

The details of competitive research

Team: The Graduate Institute of Geneva is the host unit of both the Li Commodity Chain project and the Li program. Led by Prof. Marc Hufty, the members of our team come from Argentina, Bolivia, Chile, China, Kazakhstan, and Switzerland.

Disciplines: Anthropology, desert and mountain studies, ecology, green energy, environmental humanities, geography, history, legal studies, political sciences

Schedule: First meeting on the program in May 2012. First application at Swiss level in September 2015. First presentation in June 2017. First application at the EU level scheduled for October 2017.

Budget: First award (from SHSS, NU) in October 2016. Second award (from SNF/ FNS) in April 2017. USD 577,000 for 2017-2019.

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Thank you for your attention

Спасибо за внимание